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Eleocharis melanocarpa a proliferous Plant.

By E. J. Hill.

(Plate 344.)

In the summer of 1894 I found this plant in two localities of northern Indiana in the region of the Great Lakes—Laporte and Dune Park. The former station is about twenty miles from Lake Michigan and the plants were growing in the sandy borders of Pine Lake, one of the cluster of little lakes on which Laporte is situated. The latter station is in the dune region by the shore of Lake Michigan, where the plants occur plentifully in the damp sandy margins of sloughs. Previous to that time it had been reported only from the Atlantic coast, ranging from Massachusetts to Florida. Aside from the interest it has in common with several other plants which connect the flora of the dune region with that of the Atlantic coast, a new feature was added last summer by the discovery of a proliferous habit among the plants at Dune Park. In this respect it is associated with *E. rostellata* Torr. The first that were seen were supposed to be this species, which is known to grow in southern Michigan, the locality also being within its geographical range, but I am not aware of its presence here. The lack of fruit in the specimens first obtained was an easy source of error, since the compressed stems are quite alike in both. More careful searching of the area revealed some fruiting stems on the same root with the proliferous stems and these at once showed the species to be *E. melanocarpa* Torr. The peculiar achene makes it very easy to distinguish when the fruit is mature. The tubercle is very broad and flat, its projecting edge rolled over and surrounding the top of the nut like a miniature scroll. Torrey states it well in his original description: "Tubercle very short and dilated, the margin thickened and projecting over the top of the nut." *

E. melanocarpa commonly grows in stools, several roots, with

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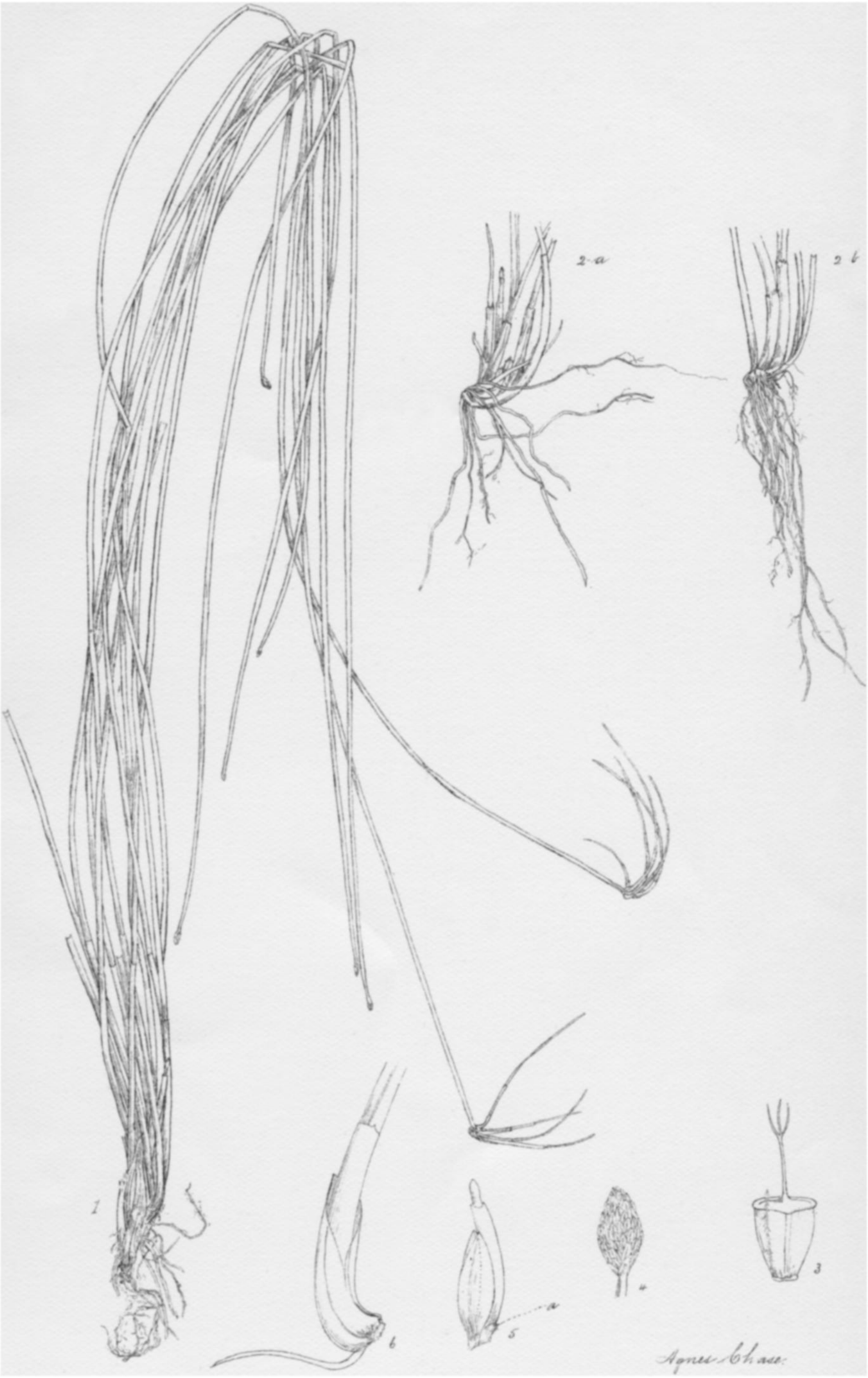
* Cyperaceae of North America, Ann. Lyc. N. Y. 3 : 316. 1836.



ELEOCHARIS MELANOCARPA.

from five to twenty stems each, being bunched together. Bunches sometimes occur a foot and more in diameter. In the case of the proliferous clusters, though several of the stems might be provided with spikes, these were nearly always fruitless, the scales being empty or the flowers or aborted fruit only present. But a few perfect achenes, perhaps but one, appeared in a spike even when the fruit matured. The strength of the plant was expended on the proliferous stems. Spikeless stems which might have rooted had they bent over and reached the ground often stood erect among the stems bearing the empty heads. The proliferous stems vary in length from 3 to 11 decimeters. They are gradually and uniformly recurved, arching over till the end comes in contact with the soil. Though the erect stems are mostly shorter, they are in many cases as long as the recurved. In no case did these seem the weaker of the two, the diameter of the stems being substantially the same in both. After the curvature has begun and the stems have increased in length they might relatively be called weaker, and would come more under the influence of gravity and the end be pulled downward. But from the initiatory steps and the regularity of the curve, almost a perfect bow, the stems manifest a geotropic habit, the necessities of the additional mode of propagation inducing a movement toward the ground.

The barren stems produce at the tip two scales relatively prominent and facing each other with their sides in the plane of the flattened sides of the stem. Where spikes are developed, these two scales are usually larger and thicker than those subsequently formed, appearing like small involucral scales at the base of the head. The scales of the spikeless stems inclose a few others which are small, thin, and hyaline. From three to six shoots spring from their axils when they become proliferous, taking the place of the achenes. They are minute bulblets starting from a bud encased in a thin, outer enveloping scale which grows in length and forms the sheath surrounding the base of the stem. At the base of the bulblet a small projection appears, showing the beginning of the root system. (Fig. 5, *a.*) Some of the bulblets may show these protuberances before the roots on any of the clusters have burst out and connected the plants with the ground. The young stems may be an inch or two high before roots appear. The bulblets develop successively, the stems being quite unequal in length. The connection with the parent stem may last for some time, new shoots from 12 to 25 centimeters high being found attached to the end of a stem, but the union is so slight at that stage that it is broken with the slightest disturbance. (Figs. 2 *a* and 2 *b*.) The connection is strong until the new shoots are well rooted.

Thanks are due Mrs. Agnes Chase, of Chicago, for the drawing to illustrate this paper.

Explanation of Plate 344.

FIG. 1. *Eleocharis melanocarpa* Torr., showing culms proliferous at the summit, ½ natural size.

FIG. 2 *a*–2 *b*. Young plants so produced, basal portions, natural size.

FIG. 3. Achene, enlarged 5 diameters.

FIG. 4. Spike, natural size.

FIG. 5. Proliferous bud showing protuberance (*a*) from which roots spring, enlarged 5 diameters.

FIG. 6. Proliferous bud, older stage, with root, enlarged 5 diameters.